

SUMMARY

**An Exploration of
Motor Vehicle Congestion Pricing
in New York**

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This summarizes a report prepared for presentation at the Eno Transportation Foundation conference on congestion pricing in New York City, November 3-4, 2003. It was supported by grants from the Eno Transportation Foundation and the Urban Land Institute. Regional Plan Association also wishes to thank the J. M. Kaplan Fund, which supported much of the research on which the report is based.

SUMMARY

An Exploration of Motor Vehicle Congestion Pricing in New York

This is a summary of a report prepared by Regional Plan Association at the request of the Eno Transportation Foundation for presentation at a conference to discuss congestion pricing in New York on November 4, 2003. The report establishes the case for considering a pricing system to manage traffic in Manhattan's Central Business District (CBD). It outlines four pricing scenarios showing a range of options for pricing some or all of the 19 entry points to the CBD. These scenarios are tested; all provide significant traffic relief and revenue gain. The report highlights the distinctions among the scenarios and uses them as a context to raise many of the issues – from opposition to implementation – that New York would face were it to proceed with a pricing plan.

Introduction: Why Now?

Traffic congestion in the tri-state New York-New Jersey-Connecticut metropolitan Region continues to mount, placing a heavy economic and quality of life burden on the City and the Region. This level of congestion results in significant loss of productivity and added delivery times and costs for businesses, as well as stress and frustration for residents. At this point, it is neither possible nor desired to expand road capacity, requiring consideration of other means to reduce traffic congestion or manage demand for motor vehicle use.

The concept of charging for the use of the road network as a means to reduce traffic volumes and speed travel is fast gaining adherents and is worth considering in New York. Other major cities have either installed charges for entering the cores of their regions or are actively studying how to do so. Early in 2003, London, which is very similar to New York in size and traffic congestion, successfully implemented a program of motor vehicle charges to enter its CBD during daytime hours. The charge, paid for in advance through a variety of cashless media, is 5 pounds (about \$8 US). The charge is enforced through cameras at the 174 entry points, with the photographs of license plates matched against the pre-paid records. There are heavy fines for non-payment. As a result, traffic volumes are down by 16 percent and motor vehicle travel times have been substantially reduced.

Other cities, both in the United States and around the world, have successfully instituted charges for road use, either on clogged roads or to enter core areas, by charging either a flat rate or using variable pricing to relieve peak period traffic. These areas have made use of technological advances to allow for cash-free, non-stop fee collection systems. Places as diverse as Singapore, Melbourne, Trondheim (Norway), Toronto, Orange County (California), and San Diego have established these programs.

In the New York Region, three of the area's four largest toll agencies have put in place some form of variable pricing – the Port Authority at its three Hudson River crossings, the New Jersey Turnpike Authority throughout its entire system, and the New York State Thruway Authority at the Tappan Zee Bridge (for trucks only).

Collecting money has never been easier. All of these New York-New Jersey programs have been made possible by the electronic toll collection system known as E-ZPass. Its use is widespread, allowing the majority of vehicles to be charged with little imposition to drivers or toll collectors. At 10 locations, high-speed, barrier-less toll collection has been implemented as a complement to E-ZPass, allowing cashless collection without stopping. This allows for the collection of tolls at a fast pace, adding capacity while not slowing traffic. Similar techniques to collect charges on streets have been proven to work elsewhere, most notably in London.

These developments raise the issue of how a congestion charging system in New York might work. Consequently, RPA, at the request of the Eno Transportation Foundation, has examined the issue in detail in the accompanying report, An Exploration of Motor Vehicle Congestion Pricing in New York.

Pricing Scenarios in New York

RPA has constructed four pricing scenarios for the purpose of understanding how congestion pricing might work, how much traffic it might discourage, how much transit use it might encourage, and how much revenue it might raise.

The four scenarios were organized around the fact that free entry for motor vehicles to the core occurs from two directions – from the east over the four free East River bridges, and from the north using eleven entry points. Each weekday, over 800,000 motor vehicles enter the core of the New York Region – the 8.5 square miles Manhattan CBD south of 60th Street. Since the 1920s these numbers have grown annually by an average of 8,000 vehicles per day. Today, only 22 percent pay to enter – at the two tunnels under the Hudson operated by the Port Authority of New York and New Jersey and the two tunnels under the East River operated by the Metropolitan Transportation Authority. About 255,000 vehicles enter Manhattan via the four currently free East River Bridges owned and operated by New York City, and 390,000 enter via the eleven southbound highways and avenues crossing 60th Street.

The four scenarios were tested using sensitivities of drivers who may choose one of five responses to an added charge – not making the trip at all, changing the destination of the trip to outside the CBD, shifting from driving to another mode, shifting the route of travel, or shifting the time of day of the trip. The scenarios tested, all assuming a cashless toll system and one-way inbound tolls, were:

1. **“Toll East River Bridges like MTA”**: Flat fee on East River bridges set at level of current tolls of the two parallel MTA tunnels;
2. **“Variable Pricing on East River Bridges; MTA to Match”**: Variable time-of-day tolls on East River bridges with MTA tolls modified to match them;
3. **“Like London”**: A pricing system at 60th Street for 13 daytime hours on weekdays with flat East River tolls during the same time period; and
4. **“Full Variable Pricing”**: Variable time-of-day pricing at all entries, including the East River bridges, MTA crossings and at 60th Street.

Scenario Issues

These scenarios, or any other similar ones that might be postulated, raise a number of issues loosely organized into four categories: a) opposition arguments involving economic impact, geographic and income equity, and poor alternatives to driving; b) public acceptance issues; c) implementation issues; and d) institutional issues.

The economic loss argument centers on the concern that a) individuals and businesses will suffer a loss of net income or profit, and b) fewer trips will be made, thereby diminishing economic activity. The counter arguments center on the value of time savings from reduced traffic congestion - - time savings significant enough to outweigh any direct or indirect costs resulting from pricing. This is likely the case in London, where the vast majority of 500 businesses surveyed believe that congestion charging has had no discernible economic impact, 9 percent believe the impact has been positive, and an equally small number believe the impact has been negative. There has been a small drop in trip-making into the core of London, but this may be attributable to other causes.

The equity argument takes into account geography and income. Impacted city residents may argue that it is unfair to impose a charge to travel within some parts of the City, particularly for drivers who are poorer and especially if they have few alternatives to driving. However, evidence presented by two other researchers¹ indicates that Brooklyn and Queens residents who drive to work earn more than non-drivers. Also, a very small proportion of residents of those two boroughs actually drive to work using the currently free East River bridges. Employer-supported programs can mitigate negative impacts on lower income workers employed at times when transit options are poor. As for the “city streets” argument, New York City incurs huge costs in maintaining the four free bridges and controlling traffic in the CBD, costs that have a substantial impact on the City’s budget. Should not the burden be placed on those who benefit from these facilities?

Any attempt to place charges of the kind suggested in the scenarios will be met with strong opposition. It will be up to the City and others supporting a pricing program to

¹ Charles Komanoff, Bridge Tolls Advocacy Project, East River Bridge Tolls: Who Will Really Pay?, March 2003, and Alan Treffeisen, New York City Independent Budget Office, Bridge Tolls: Who Would Pay? And How Much?, October 2003.

make a strong public case. A skeptical public will have to be convinced that traffic benefits would be worth the charges incurred, and that the revenues collected would be guaranteed to be used for an agreed-to public purpose, with a focus on transit options to attract former drivers. They would also need assurances that collection and enforcement systems are technically achievable and will not invade their privacy.

Other issues involve implementation. The collection techniques would have to monitor traffic either through ground-based photographic systems as in London, combined with the E-ZPass technology, or possibly using Geographic Positioning Systems (GPS) that would obviate the need for cameras at entry points. Pre-paid media to eliminate cash and barriers are assumed for all the scenarios and would have to be established. Fees would be enforced with photographs, followed by fines to those who did not pay, as is successfully done today by three of the four tolling authorities in the Region.

How should commercial vehicles be treated? To avoid placing a serious burden on commercial vehicles that may cross into the core more than once a day, the report suggests that they only be charged once a day². The charge for taxis is another issue. A similar approach to commercial vehicles might be warranted, but a full or discounted charge for each inbound trip, or no charge at all as is done in London, should also be considered. This is an important issue requiring closer examination.

Will residential exemptions or discounts be provided for City residents or more narrowly to residents of the Manhattan CBD, or not at all? The report argues that any significant residential exemptions would defeat the purpose of the program. The report also raises the issue of exemptions for environmentally benign vehicles and the traffic impacts that charges may have just outside the CBD entry points.

Finally, implementation of these scenarios will require investment in upfront costs for collection and enforcement systems, investments in bus fleets and other bus service improvements. Existing toll authorities – the Port Authority and the MTA – may need to change the way they collect tolls. In three of the four scenarios, the MTA would be required to use cameras for enforcement rather than to rely on the rudimentary enforcement arms now used.

Scenario Results

Table S-1 summarizes the key traffic impacts associated with the four scenarios. The two scenarios that place an added charge only on the East River bridges would reduce daily entries by about 5 percent, or over 40,000 vehicles. The drop in the peak period would be higher for the variable pricing scenario. The scenarios with the 60th Street charge would reduce daily entries by 9 percent and 13 percent respectively (73,000 and 105,000 vehicles), with scenario 4, the full variable time-of-day scenario, reducing peak use by 17 percent.

² Due to insufficient data, scenario results do not reflect a daily charge to commercial vehicles.

These drops in traffic would be significantly higher at the East River entry points. At the East River bridges traffic would drop by about 25 percent, likely leading to the virtual elimination of congestion at those crossings, relief on local streets at the approaches to these crossings in Brooklyn, Queens, and Manhattan, and less traffic on the Brooklyn-Queens Expressway. The impact of the added traffic shifting to the MTA tunnels would require careful study.

Traffic speeds and time savings resulting from these scenarios can be expected to be significant. The London experience indicates that a given percentage decrease in traffic volumes reduces congestion levels in percentage terms substantially more than the volume drop. One study that attempted to measure this relationship while looking at East River tolls supported this conclusion³. Applying these relationships to specific avenues and streets in Manhattan suggests travel time savings throughout the day on major streets to be from one to three minutes for every mile traveled, at the high end of that range for Scenarios 3 and 4. A two minute time savings for traveling a mile on a major road may seem modest, but it is equivalent in its time saving impact to upgrading a 20 mph highway to a 60 mph highway.

**Table S-1
Summary of Scenario Results**

SCENARIO RESULTS	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Scenario Name	Toll East River Bridges like MTA	Variable Pricing on East River Bridges; MTA to Match	Like London	Full Variable Pricing
Total Daily Inbound Traffic	796,293	793,781	763,317	731,044
Change in Total Daily Inbound Traffic	-40,092	-42,604	-73,069	-105,341
Percent Change in Daily Inbound Traffic	-5%	-5%	-9%	-13%
Change in Number of Vehicles at AM Peak	-10,257	-15,613	-25,827	-35,000
Percent Change AM Peak	-5%	-8%	-13%	-17%
Change in Trucks at AM Peak	0	-466	-1,023	-1,052
Percent Change in Trucks at AM Peak	0%	-3%	-7%	-7%
Loss of Trip Making to the Core (Trip Shift)	-8,559	-9,083	-16,249	-25,810
Increase in Daily Transit Use (Mode Shift * 3)	94,599	100,473	170,458	270,839

The reduction in traffic volumes could also open the way for long considered amenity improvements such as closing Broadway and the Central Park Drives to motor vehicle traffic.

³ Charles Komanoff and Brian Ketcham, Bridge Tolls Advocacy project, The Hours: Time Savings from Tolling the East River Bridges, July 2003

The scenario results indicate that there would be very small losses in the number of trips to the CBD – ranging from 13,000 to 39,000 people depending on the scenario. This translates into at most one percent fewer trips than the four million people entering the CBD.

Daily transit ridership would climb under all scenarios, with growth ranging from 95,000 to 270,000 trips daily to the system, representing gains in ridership of 1.5 to 4 percent.

The impact on truck traffic of the four scenarios would be felt in shifts in the time of day and routings. Five hundred fewer trucks would travel into the CBD in the peak period for Scenario 2 and over 1,000 for Scenarios 3 and 4. The routing of trucks would also shift significantly. Further research is needed to determine how many would shift to the MTA tunnels and how many would be rerouted via the Verrazano-Narrows Bridge.

All scenarios would generate substantial revenues – about \$700 million for each of the first three scenarios, and more than double that for Scenario 4, which not only adds tolls at both the East River and 60th Street but has various levels of pricing in place 24 hours a day. The gain to the City would be somewhat less than these amounts, since some revenues in each case would accrue to the MTA as drivers switch to the tunnels. Nevertheless, the addition to the public coffers could capitalize anywhere from \$7 billion to \$19 billion of new construction, possibly for investment in transit facilities agreed to as part of a congestion pricing program.

Closing

While this report does not recommend which, if any, of these scenarios should be pursued, it does lay out the relative impacts and advantages of each. The distinctions need to be discussed and debated. This paper is intended to highlight these distinctions - - between flat and variable pricing, daytime and 24-hour pricing, and pricing at some or all of the entry points to Manhattan's CBD.

If congestion pricing is to be part of New York's transportation future, there is much work to be done. The pricing concept is alien to most New Yorkers, while East River Bridge tolls (the only element common to all scenarios) has a long history of opposition. An educational campaign backed by research outlined in the report and responding to legitimate concerns will be needed to inform the public so the issue can be discussed in an enlightened fashion⁴. Agreements on the various implementation issues, including an early implementation program of short-term transit and traffic improvements, would be needed. Beyond that, agreement on a program for long-term improvements in the transportation system must be reached with guarantees that the funds would be spent for their intended purpose.

⁴ A similar strategy was followed in London, notably with publishing the RCOL report in 1998 and informed public discussion afterwards.